THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of determining an inlet flow rate (F_{inlet}) of a flowable material including:

(a) passing an inlet stream of flowable material through a chamber having an outlet aperture to one end thereof;

(b) measuring a first rate of change of quantity of material in the chamber when the material is entering at said inlet flow rate;

(c) measuring a second rate of change of quantity of material in the chamber when no material is entering the chamber; and

(d) calculating the inlet flow rate F_{inlet} from said first and second rates;

wherein steps (c) and (d) are conducted whilst the whole of the outlet aperture in the chamber is occupied by the flowable material.

2. The method as claimed in claim 1 wherein the outlet aperture has a cross-sectional area such that, in use, flowable material flows from said outlet aperture at a rate less than the minimum flow rate to be measured.

3. The method as claimed in claim 2 wherein the first rate of change is calculated by measuring the time interval for the mass of material to pass from a first mass m_1 to a second mass m_2, and the second rate of change is calculated by measuring the time interval for the mass of material to pass from a third mass m_3 to a fourth mass m_4.

4. The method as claimed in claim 3 wherein the fourth

mass is equal to the first mass ($m_4 = m_1$) and the third mass is equal to the second mass ($m_3 = m_2$).

Sub A1

5. The method as claimed in anyone of claims 2 to 4 wherein step (b) is conducted prior to step (c).

6. The method as claimed in any one of claims 2 to 5 wherein the outlet aperture is one of a plurality of outlet apertures and the sum of cross sectional areas of said outlet apertures is less than the minimum flow rate to be measured.

7. The method as claimed as claimed in claim 1 wherein the chamber includes an elongate slot.

8. The method as claimed in claim 7 wherein the dimensions of the elongate slot are such that the flow rate of flowable material can be calculated at a different time interval to the time interval of steps (b) and (c) by an open slot method.

Sub A2

9. The method as claimed in claim 7 or claim 8 wherein the outlet aperture is spaced apart from the elongate slot.

10. The method as claimed in claim 9 wherein the chamber is elongate in an upright orientation and the elongate slot is longitudinally spaced apart from the outlet aperture.

Sub A3

11. A flow meter for use in the method according to any one of claims 1 to 10, including:

a chamber through which the flowable material can pass, the chamber including an outlet aperture at a lower end thereof and a wall defining an enclosed region above said outlet aperture, wherein the dimensions of the wall are such that flow rates can be measured whilst the whole

Sub A3 conc.

of the outlet aperture in the chamber ~~is occupied by flowable material~~.

12. The flow meter as claimed in claim 10 or claim 11 wherein the chamber includes a base which is inclined towards the outlet aperture.

Sub A4

13. The flow meter as claimed in any one of claims 1 to 12 wherein the outlet aperture is one of a plurality of outlet apertures, and the base of the chamber is shaped to facilitate even distribution to each outlet aperture.

14. The flow meter as claimed in any one of claims 11 to 13 wherein the chamber further comprises outflow openings above the enclosed region of the chamber.

15. The flow meter as claimed in any one of claims 11 to 14 wherein the chamber includes an elongate slot.

16. The flow meter as claimed in claim 15 wherein the outlet aperture is constituted by the elongate slot.

17. The flow meter as claimed in claim 15 wherein the outlet aperture is spaced apart from the elongate slot.

18. The flow meter as claimed in claim 17 wherein the outlet aperture is at a lower end of the chamber and the elongate slot is spaced vertically above the outlet aperture.

Sub A5

19. The flow meter as claimed in any one of ~~claims 11~~ to 18 wherein the outlet ~~aperture~~ is one of a plurality of ~~outlet~~ apertures.

20. A flow meter for calculating the flow rate of a flowable material including:

a chamber through which the flowable material can pass, the chamber having an outlet aperture at a lower end thereof of a cross section that enables flowable material to drain from the chamber at a rate less than the minimum flow rate to be measured.

Sub A6

21. The flow meter as claimed in any one of claims 11 to 20 including measurement means for measuring the time taken for the mass of flowable material in the meter to pass from a first mass to a second mass.

22. The flow meter as claimed in claim 21 wherein the measurement means includes:

displacement means enabling the chamber to move between a first position when a first mass of flowable material is present in the chamber and a second position when a second mass of material is present in the chamber, and

timing means by means of which the time taken for the chamber to move between said first and second positions is measured.

23. The flow meter as claimed in claim 22 wherein the measurement means detects movement between two discrete positions corresponding to the first mass and the second mass only.

24. A method for calibrating the rate at which flowable material is discharged from a storage vessel through a flow control means, said flow control means having a plurality of settings controlling the rate of flow of flowable material discharged from the storage vessel over a flow rate range, the method including:

(a) calculating the flow rate for a first flow rate setting of the flow control means;

(b) calculating the flow rate for a second flow rate setting of the flow control means; and

(c) calculating a flow rate versus flow control means setting expression.

Sub A7

25. The method as claimed in claim 24 wherein the flow rates for the first flow rate setting and the second flow rate setting are measured by the method defined in any one of claims 1 to 10.

26. The method as claimed in claim 24 or claim 25 wherein the first and second flow rate settings are the settings for flow rates towards the maximum and minimum ends of the flow rate range.

27. The method as claimed in any one of claims 24 to 26 wherein the flow rates at the first and second flow rate settings are calculated using the flow meter defined in any one of claims 20 to 24.

28. A method of monitoring a continuous feeding system for flowable materials which flow through a flow control means having a plurality of settings, said method comprising:

(a) calibrating the rate at which flowable material is discharged to the flow control means to obtain a flow rate versus flow control means setting expression;

(b) setting the flow control means at the setting required to obtain a required flow rate as calculated by the flow rate versus

flow control means setting expression; and

(c) re-calibrating the rate at which flowable material is discharged through the flow control means to obtain a re-calibrated flow rate versus flow control means setting expression.

29. The method as claimed in claim 28 wherein the re-calibration step is conducted when a precondition is met.

30. The method as claimed in claim 29 wherein the precondition is one of the following:

(i) that the feed rate required has changed and the previous flow rate was the maximum flow rate; and

(ii) that the flow rate required has changed, the new flow rate required is not the maximum flow rate, the setting of the flow control means is changed to correspond to the new flow rate required, the flow rate at the new flow control means setting is calculated, and the new flow rate calculated is not within a tolerance range of the flow rate expected at the new flow control means setting.

31. The method as claimed in claim 29 wherein the precondition is:

(i) that the discharge flow rate at a given flow control means setting measured by a second flow rate determining method is not within a tolerance range of the flow rate expected at the given flow control means setting.

Sub A8

32. The method as claimed in any one of claims 28 to 31 wherein the calibration and re-calibration steps are conducted by the method according to any one of claims 24 to 31.

33. A method of measuring an inlet flow rate of a flowable material substantially as herein described with reference to the examples.

34. A flow meter substantially as herein described with reference to the accompanying drawings.

35. A method for calibrating the rate at which flowable material is discharged from a storage vessel through a flow control valve substantially as herein described with reference to the accompanying drawings.

36. A method of monitoring a continuous feeding system for flowable materials substantially as herein described with reference to the accompanying drawings.